



The Motor Industry Software Reliability Association

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Phase 1 Report

Sources of Information

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Contents

	Page
Acknowledgements	i
1. Introduction	1
2. Reference documents	1
3. Human Factors reference list	6
3.1 Bibliography	6
3.2 References	7

1. Introduction

This report is a summary of the findings of the first phase of the MISRA study.

It consists of a list of useful reference and background documents identified during the study. This list was maintained and updated throughout the MISRA study.

A reference list and bibliography for the Human Factors subproject are included here. All other subproject reports include their own reference lists.

No significance should be attached to the order in which the references are presented, and no endorsement or otherwise of a document by the controlling members of MISRA or its consultants is implied by inclusion in this report.

2. Reference documents

1. L. Scharer, "Pinpointing Requirements", *Datamation*, April 1981.
2. M. Dorfman, "System and Software Requirements Engineering", *IEEE*, 1990, pp. 4–15.
3. C.P. Svoboda, "Structured Analysis", *IEEE*, 1990, pp. 218–237.
4. C.V. Ramamoorthy, A. Prakash, W-T Tsai and Y. Usada, "Software Engineering: Problems and Perspectives", *Computer*, October 1984, pp. 191–209.
5. E.J. Chikofsky and B.L. Rubenstein, "CASE: Reliability Engineering for Information Systems", *IEEE Software*, March 1988, pp. 11–16.
6. P. Lempp and R. Lauber, "What productivity increases to expect from a CASE environment: Results of a user survey", *Productivity: Progress, Prospects, and Payoff*, June 1988, pp. 13–19.
7. E.J. Chikofsky, "How to Lose Productivity with Productivity Tools", *Productivity: Progress, Prospects, and Payoff*, June 1988, pp. 1–4.
8. R.J. Lano, "A Structured Approach for Operational Concept Formulation", *IEEE*, 1990, pp. 48–59.
9. J.D. Sailor, "System Engineering: An Introduction", *IEEE*, 1990, pp. 35–47.
10. Möller and Paulish, *Software Metrics*, published 1992 Chapman and Hall (distributed by the IEEE), ISBN 0-7803-0444-6.

11. *IEEE Software Engineering Standards Collection*, The Institute of Electrical and Electronics Engineers, Inc., Spring 1991 Edition. Including:
 - ANSI/IEEE Standard 729-1983, *Glossary of Software Engineering Terminology*.
 - ANSI/IEEE Standard 730.1-1989, *Standard for Software Quality Assurance Plans*.
 - ANSI/IEEE Standard 828-1983, *Standard for Software Configuration Management Plans*.
 - ANSI/IEEE Standard 829-1983, *Guide for Software Test Documentation*.
 - ANSI/IEEE Standard 830-1984, *Guide for Software Requirements Specifications*.
 - ANSI/IEEE Standard 983-1986, *Guide for Software Quality Assurance Planning*.
 - ANSI/IEEE Standard 1008-1987, *Standard for Software Unit Testing*.
 - ANSI/IEEE Standard 1012-1986, *Standard for Software Verification and Validation Plans*.
 - ANSI/IEEE Standard 1016-1987, *Recommended Practice for Software Design Descriptions*.
 - ANSI/IEEE Standard 1058.1-1987, *Standard for Software Project Management Plans*.
 - IEEE Standard for Software Safety Plans*, Draft, p. 1228, 19 July 1991.
12. *Safety-Related Systems: A Professional Brief for the Engineer*, Institution of Electrical Engineers, January 1992, Issue 1. Especially Chapter 8, "References and Bibliography".
13. Institution of Gas Engineers, Safety Recommendations IGE/SR/15, *Programmable Equipment in Safety Related Applications* (Draft for comment), April 1994.
14. Computing Services Association, *Safety Critical Systems Guidance Notes*.
15. The Engineering Council, *Guidelines on Risk Issues*, February 1993; incorporating *Code of Professional Practice for Engineers and Risk Issues*, The Engineering Council, October 1992.
16. *Guidelines for the documentation of computer software for real time and interactive systems*, Institution of Electrical Engineers, 2nd edition, 1990.
17. MIL-STD-882C, *System safety program requirements*, 19 January 1993.

18. *Policy Statement on Safety-Related Computer Systems*, The British Computer Society, 8 June 1993.
19. *Review of Current Standards for Safety Critical Software*, University of Leeds School of Computer Studies Technical Report 90.04, December 1990.
20. *Review of Current Practices for the Certification of Safety Critical Software*, University of Leeds School of Computer Studies Technical Report 90.05, December 1990.
21. T.F. Buckley, P.H. Jesty, K. Hobley and M. West, "DRIVE-ing Standards: A Safety Critical Matter", *COMPASS-90 (IEEE)*, pp. 164–172.
22. P.H. Jesty, T.F. Buckley and M.M. West, "Critical Software — A Pre-Standard and its Certification", *Safetynet '90 Conference*, 16/17 October 1990.
23. P.H. Jesty, T.F. Buckley, K.M. Hobley and M. West, "DRIVE Project V1051 — Procedure for Safety Submissions for Road Transport Informatics", *IEE Colloquium on "Safety Critical Software in Vehicle and Traffic Control"*, no. 1990/31, February 1990.
24. P.H. Jesty, T.F. Buckley and M.M. West, "Safe RTI Systems — A Proposal for a Standard", *8th Automotive Electronics Conference*, IEE, October 1991.
25. P.H. Jesty, W. Asmuth, R. Elink Schuurman, D. Clutterbuck, T.F. Buckley, J. Sonntag, J. Giezen, H. Trier, J.L. Wackie Eijsten and M.M. West, "The Development of Safe Advanced Road Transport Telematic Systems", *EC DRIVE I*.
26. T.F. Buckley, P.H. Jesty and M.M. West, "Some Results from DRIVE", *COMPASS-91*.
27. P.H. Jesty, T.F. Buckley and M.M. West, "The Development of Safe Advanced Road Transport Telematic Software", *Microprocessors and Microsystems*, **17(1)**, 1993, pp. 37–46.
28. *Technical Requirements Standards for Non-Safety Signalling Software*, BRB/LU Ltd/RIA Technical Specification no. 19, 1988.
29. *Safety Related Software for Railway Signalling*, BRB/LU Ltd/RIA Technical Specification no. 23, 1991 (consultative document).
30. DO-178B Final Draft, *Software Considerations in Airborne Systems and Equipment Certification*.
31. *Towards a European Standard: The Development of Safe Road Transport Informatic Systems*, Draft 2, DRIVE Safely (DRIVE I Project V1051), March 1992.

32. *Programmable Electronic Systems in Safety Related Applications: 1. An Introductory Guide*, Health and Safety Executive, London: HMSO, 1987.
33. *Programmable Electronic Systems in Safety Related Applications: 2. General Technical Guidelines*, Health and Safety Executive, London: HMSO, 1987.
34. BS 4778: Section 3.2: 1991, *Quality Vocabulary, Part 3: Availability, reliability and maintainability terms, Section 3.2: Glossary of International Terms* (equivalent to IEC 50(191): 1990).
35. INT DEF STAN 00-55 (Part 1), *The Procurement of Safety Critical Software in Defence Equipment, Part 1: Requirements*, Issue 1, 5 April 1991.
36. INT DEF STAN 00-55 (Part 2), *The Procurement of Safety Critical Software in Defence Equipment, Part 2: Guidance*, Issue 1, 5 April 1991.
37. INT DEF STAN 00-56, *Hazard Analysis and Safety Classification of the Computer and Programmable Electronic System Elements of Defence Equipment*, Issue 1, 5 April 1991.
38. IEC 65A (Secretariat) 122, *Software for Computers in the Application of Industrial Safety-Related Systems*, version 1.0, IEC SC 65A WG 9, 26 September 1991.
39. IEC 65A (Secretariat) 123, *Functional safety of electrical/electronic/programmable electronic systems: Generic Aspects, Part 1: General requirements*, IEC SC 65A WG 10, 15 April 1991.
40. TickIT, *A Guide to Software Quality Management System Construction and Certification using ISO 9001/EN 29001/BS 5750 Part 1*, TickIT, Issue 2.0, 28 February 1992.
41. *Safety Related Computer Controlled Systems Market Study*, Department of Trade and Industry Review, London: HMSO, 1992.
42. *Automotive Software and its Validation*, Autotech 1991 Congress Seminar Papers **25**.
43. W.J. Cullyer, "High-integrity software for automotive applications", *Proc. IMechE, Part D: Journal of Automobile Engineering*, **205**, 1991, pp. 185–191.
44. J.A. McDermid, "Issues in Developing Software for Safety Critical Systems", *Reliability Engineering and System Safety*, **32**, 1991, pp. 1–24.
45. L.M. Barroca and J.A. McDermid, "Formal Methods: Use and Relevance for the Development of Safety-Critical Systems", *The Computer Journal*, **35(6)**, 1992, pp. 579–599.

46. University of York Department of Computer Science, *Annual Research Review 1991–92*, March 1992.
47. P. Fenelon and J.A. McDermid, "Integrated Techniques for Software Safety Analysis", in *Proceedings of IEE Colloquium on Hazard Analysis*, 9 November 1992.
48. *Directions in Safety-critical Systems*, Proceedings of the Safety-critical Systems Symposium, 9 – 11 February 1993, Bristol (edited by F. Redmill and T. Anderson, published Springer-Verlag London, 1993).
49. R. Bell and D. Reinert, "Risk and system integrity concepts for safety-related control systems", *Microprocessors and Microsystems*, **17(1)**, 1993, pp. 3–15.
50. "Sicherheitstechnische Beurteilung und Prüfung mikroprozessorgesteuerter Sicherheitseinrichtungen", in *BIA-Handbuch*, 17.Lfg X/91 (in German).
51. D. Reinert, "Moderne Technik: Herausforderung und Chance für die Arbeitssicherheit-aufgezeigt am Auffahrschutz von fahrerlosen Flurförderzeugen", in proc. of *Trends in Materialfluß-systemen*, pp. 169–174 (in German).
52. Draft DEF STAN 00-56 Part 1, *Safety Management Requirements for Defence Systems Containing Programmable Electronics. Part 1 — Requirements*.
53. Draft DEF STAN 00-56 Part 2, *Safety Management Requirements for Defence Systems Containing Programmable Electronics. Part 2 — General Application Guidance*.
54. K-G Besel and T.H. Hirth, *Design Systems for the MSR Project*, MIRA Translation 92/14 (publ. in *VDI Berichte*, **1009**, 1992).
55. J. Leohold, *The MSR Project: Tool Support for New Ways of Cooperation Between Vehicle Manufacturer and Supplier*, MIRA Translation 92/15 (publ. in *VDI Berichte*, **1009**, 1992).
56. S. Austin and G.I. Parkin, *Formal Methods: A Survey*, publ. National Physical Laboratory, 31 March 1993.
57. *Guidelines for the documentation of computer software for real time and interactive systems*, Institution of Electrical Engineers, 2nd edition, 1990.
58. UL 1998, *Standard for Safety-Related Software*, first edition, Underwriters' Laboratory, 4 January 1994, ISBN 1-55989-550-0.
59. *An Overview of the Standard for Safety-Related Software*, UL 1998, Underwriters' Laboratory, January 1994.
60. PSS-05, *ESA Software Engineering Standards*, European Space Agency, 1994, ISBN

0-13-106568-8.

61. DIN 801, *Principles for Computers in Safety Related Systems*, VDE, January 1990 (with addendum April 1994).
62. EN 50128, *Railway Applications: Software for Railway Control and Protection Systems* (draft).
63. *The Validation of Automated Systems in Pharmaceuticals Manufacturing*, IPSE Draft, September 1994.
64. Prometheus Guideline *Software Dependability*, Prometheus Project Working Group 5, Software Dependability Subgroup, October 1994.

3. Human Factors reference list

3.1 Bibliography

1. H.J. Bullinger and B. Shatel, "Human-Computer Interaction", *INTERACT '87*, North Holland, Elsevier, 1987.
2. H.J. Bullinger, *Human Aspects of Computing: Design and Use of Interactive Systems and Work with Terminals*, 1991.
3. B. Curtis, *Human Factors in Software Development*, IEE Computer Society Press, 1986.
4. D. Diaper *et al.*, "Human-Computer Interaction", *INTERACT '90*, North Holland, Elsevier, 1990.
5. R.W. Ehrich and R.C. Williges, *Human-Computer Dialogue Design*, North Holland, Elsevier, 1986.
6. P.A. Hancock, *Human Factors Psychology*, 1987.
7. H. Galer *et al.*, *Methods and Tools in User-centred Design for Information Technology*, North Holland, Elsevier, 1992.
8. M. Helander, *Handbook of Human-Computer Interaction*, 1990.
9. G. Salvendy and M.J. Smith, *Designing and Using Human-Computer Interfaces and Knowledge-based Systems*, North Holland, Elsevier, 1989.
10. B. Shakel, "Human-Computer Interaction", *INTERACT '84*, North Holland, Elsevier,

1984.

11. I. Sommerville, *Software Engineering*, 1992.
12. G. Cockton, *Engineering for Human Computer Interaction*, 1990.

3.2 References

1. D. Boundy, "A Taxonomy of Programmers", *Software Engineering Notes*, October 1991.
2. M.L. Brown, *Software Systems Safety and Human Error Avoidance*, 1987.
3. D. Clutterbuck, *Development Issues for High Integrity Automotive Software*, 1991.
4. W.J. Cullyer "High Integrity Software for Automotive Application", *Journal of Automobile Engineering*, IMechE, (1991).
5. J. Elliot, *Assessing and Validating Automotive Software*, 1991.
6. M. Frese, "Error Management of Error Prevention: Two Strategies to Deal With Errors in Software Design", in *Human Aspects in Computing*, H.J Bullinger, 1991.
7. R.A. Haslam, *External Computer Software Development — A Case Study*.
8. J.C. Kelly and Y.C. Sherif, "Comparison of Four Design Methods for Real Time Software Development", *Information and Software Technology*, **34(2)**, February 1992.
9. H. Krasner *et al.*, "Groupware Research and Technology Issues with Application to Software Process Management", *IEEE Transactions on Systems, Man and Cybernetics*, **21(4)**, July/August 1991.
10. K.Y. Lim *et al.*, *Case Study Illustration of a Structural Method for User Interface Design*.
11. J. Lundell and M. Notess, *Human Factors in Software Development: Models, Techniques and Outcomes*, 1991.
12. A. Viereck *et al.*, "Structured Design of User-Interfaces and Knowledge Based Systems", in *Human Aspects in Computing*, H.J Bullinger, 1991.
13. E.L. Wiener, *Management of Human Error by Design*, 1987.